Three New Gastropod (Mollusca) Species from the New World

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ABSTRACT. Three new gastropod species from the New World assigned to the families Muricidae, Columbellidae and Terebridae, are described and compared with their closest relatives. *Chicoreus (Siratus) vokesorum*, n. sp., from the Bahama Islands is compared with *C (S.) cailleti* (Petit de la Saussaye, 1856) and two species of *Vokesimurex* Petuch: *V. tryoni* (Hidalgo in Tryon, 1880) and *V. sunderlandi* (Petuch, 1987). *Columbella marrae*, n. sp., from southwestern Panama, is compared with *C. sonsonatensis* (Mörch, 1860) and *C. fuscata* Sowerby, 1832; and *Terebra mugridgeae*, n. sp., from the northern Gulf of Mexico, is compared with *T. riosi* Bratcher and Cernohorsky, 1985, *T. petiveriana* Deshayes, 1857, *T. concava* (Say, 1826), *T. protexta* (Conrad, 1846), and *T. vinosa* Dall, 1889.

INTRODUCTION

Long years of interest in western hemisphere mollusks, the access to important molluscan collections, and the opportunity to collect in areas of the ocean difficult to reach, has led the author to the discovery of three unusual new species.

Sometime ago the author obtained a single, live collected specimen of an undescribed muricid species that can be assigned to the subgenus *Chicoreus (Siratus)*. It had been dredged in deep water in the Bahama Islands. When a second live collected specimen from the same general area was discovered on a reef wall by means of *scuba* diving, the author decided to describe the species.

JOUSSEAUME (1880) recognized a group of muricids, typified by *Murex senegalensis* Gmelin, 1791, as the genus *Siratus*. At that time he did not describe the genus but did so in 1882. Fourteen living species of *Siratus* are currently known from the western Atlantic. All fourteen have been treated by VOKES (1990), who referred them to the subgenus *Chicoreus (Siratus)*.

In November, 1996, the author spent several days on board of the R/V "Pelican", a research vessel operated by the Louisiana Universities Marine Consortium (LUMCON). While dredging off the Mississippi coast, several specimens of an undescribed species of *Terebra*, were collected in anaerobic sediment (black mud) in shallow water.

BRACHTER & CERNOHORSKY (1987) have monographed the family Terebridae, describing, figuring, and comparing nineteen living western Atlantic species. Since the publication of that monograph, six new western Atlantic species have been described: *Terebra biminensis* Petuch, 1987; *T. lindae* Petuch, 1987; *T. pacei* Petuch, 1987; *T. curacaoensis* De Jong and Coomans, 1988; *T. imitatrix* Auffenberg and Lee, 1988; and *T. reticulata* Lopes de Simone and Verissimo, 1995.

Finally, in January, 1998, a dredging opportunity was afforded the author by an invitation from James Ernest, the well-known Panamanian collector. Dredging in the isolated Islas Secas, Golfo de Chiriquí, southwestern Panama, yielded five specimens of an undescribed species of *Columbella*, which were found on a sandy bottom covered with live and dead *Pinctada mazatlanica* (Hanley, 1856) and *Hyotissa hyotis* (Linnaeus, 1758).

ABBREVIATIONS OF REPOSITORY INSTITUTIONS

ANSP- The Academy of Natural Sciences, Philadelphia, PA.
BMSM- The Bailey-Matthews Shell Museum, Sanibel, FL.
LACM- The Natural History Museum of Los Angeles County, CA.
UF- The University of Florida Natural History Museum, Gainsville, FL.

SYSTEMATICS

Superfamily **MURICOIDEA**

Family **Muricidae** Rafinesque, 1815

Genus ***Chicoreus*** Montfort, 1810

Subgenus ***Siratus*** Jousseaume, 1880

Chicoreus (Siratus) vokesorum, new species
(Figures 1-4)

Description. Shell club-shaped, delicate; last whorl small, globose; length of holotype 32 mm; siphonal canal long, 17 mm in length. Protoconch of 2.5 whorls, last whorl spirally ridged (Fig. 3); 4.5 teleoconch whorls. Spiral ornamentation on first two teleoconch whorls of four strong cords, forming knobs at intersection with sharp axial ribs; spiral cords increasing to about 12 on body whorl, diminishing in strength. Axial ribs strong on first two teleoconch whorls, about 10 in number on the second; with every third rib developing a shoulder spine. On third whorl spinose ribs becoming varices, ornamented with two adapically recurved spines; other axial sculpture becoming weak, barely appearing as slightly swollen nodes. Last whorl with three well developed varices each with three recurved, adapically projecting spines; shoulder spine longest, and one minor and two major intervarical ridges, producing spirally elongated nodes where crossed by spiral threads. Suture simple, crossed by axial growth lamellae. Aperture ovate. Inner lip adpressed posteriorly, slightly erect on almost entire length; columella smooth. Outer apertural lip weakly erect, crenulated. Siphonal canal long, about 54% of total shell length; open by a very narrow slit, strongly recurved dorsally; ornamented with a single recurved spine on each varix at base of body whorl. Shell white, with a narrow, diffused brownish-red band at shoulder, darker when crossing varices; a similar band at base of last whorl.

Radula: See Figure 4

Type material. Holotype (ANSP 400854) length 32.0 mm, width of last whorl 10.5 mm. Paratype (Craig L. Caddigan collection) length 24.0 mm, width of last whorl 9.0 mm.

Type locality. Off San Salvador I., central Bahama Islands, taken live at 273 m.

Distribution. Off San Salvador and Lee Stocking Islands, central Bahamas, taken live at 46 - 273 m.

Etymology. Named for Dr. Emily H. Vokes and Dr. Harold E. Vokes in recognition of their life-long devotion to the study of the Muricidae and Bivalvia respectively and their unselfish will to help amateur conchologists.

Discussion. Currently, there are two known specimens of this species. The holotype came from the collection of the late Eugenia Wright, the well-known muricid collector from Arizona. A second specimen was collected on September 13, 1996, by Mr. Craig L. Caddigan of Fort Pierce, Florida, while *scuba* diving on a reef wall in 46 m off Lee Stocking Island, central Bahamas. Both specimens were collected live.

The unique adapically directed spine formation and the ridged protoconch immediately separate this shell from all other western Atlantic species of *Chicoreus* (*Siratus*). In general shape it is closest to typical *C. (S.) cailleti* (Petit de la Saussaye, 1856), less so to the variation *kugleri* (Clench and Pérez Farfante, 1945). However, *C. (S.) cailleti* has a smooth protoconch of 1.5 whorls, has a denticulated columellar lip and more numerous whorls with different spine ornamentation. Because of its size and fragility the new species could be confused with *Vokesimurex tryoni* (Hidalgo *in* Tryon,1880) and *Vokesimurex sunderlandi* (Petuch, 1987). However, these latter two species have the straight siphonal canal characteristic of *Vokesimurex* Petuch, 1994 (type species: *Murex messorius* Sowerby, 1841) and differ in coloration, sculpture and spine formation.

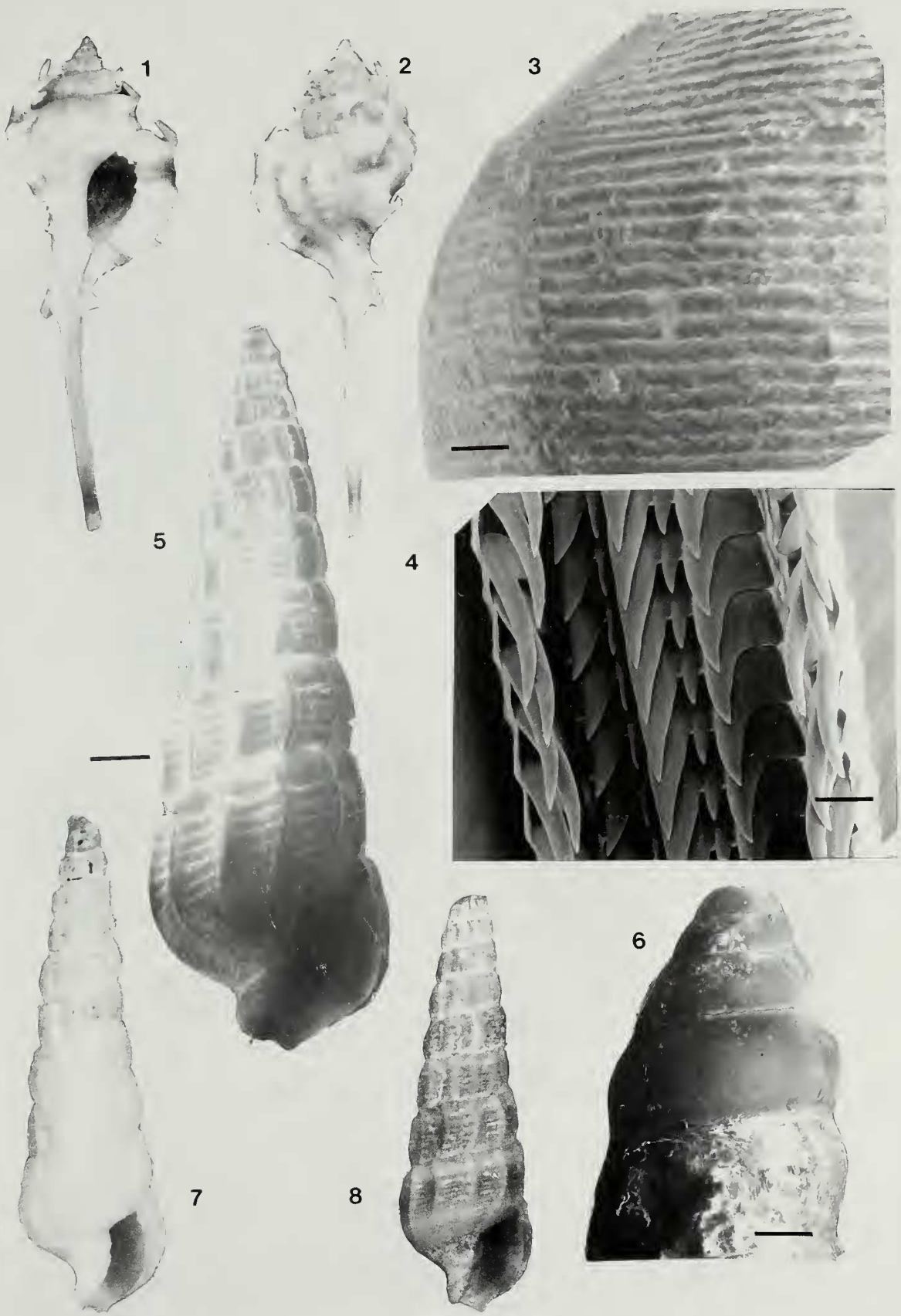
Family Columbellidae

Genus Columbella Lamarck, 1799

Columbella marrae, new species
(Figures 9-14)

Description. Shell thick, typically columbelloid; up to 9.6 mm in length. First whorl eroded on only protoconch available, two smooth, bulbous whorls remaining; tan in color. Protoconch of planctotrophic larval type, bearing a deep sinusigeral notch. Teleoconch of five whorls, the first slightly concave and axially ribbed, the next three nearly smooth. Posterior to suture, a thickened band delimited by poorly developed pustules, giving median whorls a concave appearance. Last whorl pear-shaped, smooth. Aperture S-shaped; outer lip thickened, arched, with about ten denticles; anal canal delineated by thickening of the parietal wall; parietal wall glazed over, glaze thick enough in some specimens to form shield. Columella twisted, bearing 5 to 9 denticles. Shell tan, with irregular nebulous areas either white or pale violet, with freckled tan markings. Outer aperture yellow; pale lavender inside.

Figs. 1-4. *Chicoreus (Siratus) vokesorum* n. sp. Holotype. Figs. 1-2. Ventral and dorsal views (Length: 32.0 mm, Width: 10.5 mm). Fig. 3. Detail of protoconch (Scale bar: 40µm). Fig. 4. Radula (Scale bar 30µm). **Figs. 5-8.** *Terebra mugridgeae* n. sp. Fig. 5. Holotype (Length: 9.7 mm; Width: 2.7 mm). Fig. 6. Protoconch of Holotype (Scale bar: 180µm). Fig. 7. Paratype F (Length: 16.1 mm; Width: 4.6 mm). Fig. 8. Paratype E (Length:13.5 mm; Width: 4.2 mm).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Type material. Holotype (ANSP 400855) length 9.6 mm, width 5.7 mm (Figs. 9-12). Paratype A (ANSP 400856) length 8.6 mm, width 5.2 mm (Figs.13-14). Paratype B (BMSM 2242) length 9.0 mm, width 5.4 mm. Paratype C (LACM 2870) length 8.0 mm, width 5.2 mm. Paratype D (author's collection 17018) length 8.2 mm, width 5.3 mm.

Type locality. Islas Secas, Golfo de Chiriquí, southwestern Panama. Dredged in 24 to 37 m, on a sand bottom.

Distribution. Known only from the type locality.

Etymology. Named for Mrs. Lauretta Marr, of Midland, Texas, for her interest in Panamanian shells.

Discussion. The relatively small area where the new species was found is characterized by very strong currents, which is probably the cause for having such an abundance of *Pinctada mazatlanica* and *Hyotissa hyotis*. These two species seem to be essential to the development of the rich molluscan fauna of the area, for if the dredge did not bring up those two species, very few or no other species were dredged. The area yielded 73 species of gastropods representing 34 families. Of these, the muricids were by far the most numerous with 11 species. The bivalves were represented by 26 species in 15 families.

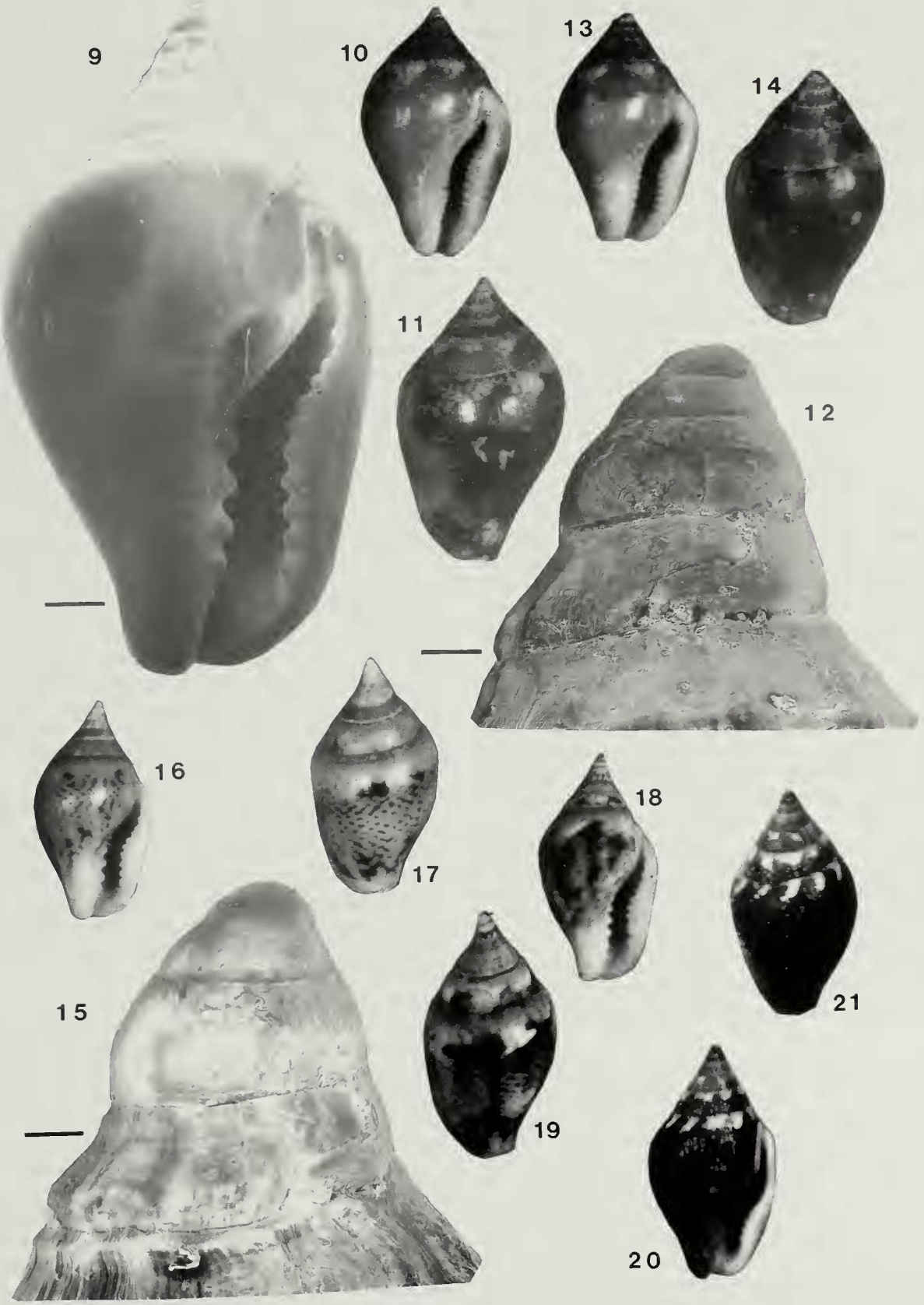
In spite of variations in the nebulous color markings of the species, all five type specimens show them below the suture to a greater or lesser degree. The markings may be present in other parts of the body whorl; however, the general appearance of the species is constant.

The small size separates this species from most Panamic species of *Columbella*. The closest congener is *Columbella sonsonatensis* (Mörch, 1860) (Figs. 15-19). However, that species has sharper columellar denticles; is narrower (see Table I); the shell is white, streaked with blackish-brown markings; has a white lip and aperture, with darker markings showing through; and it has four white, semi-translucent protoconch whorls comparatively larger than the new species. *Columbella sonsonatensis* prefers an intertidal, muddy environment, but *C. marrae* inhabits deeper water, on a coralline substrate.

C. marrae	Locality	Length (mm)	Width (mm)	L / W
Holotype	Islas Secas	9.6	5.7	1.68
Paratype A	Islas Secas	8.6	5.2	1.65
Paratype B	Islas Secas	9.0	5.4	1.67
Paratype C	Islas Secas	8.0	5.2	1.54
Paratype D	Islas Secas	8.2	5.3	1.55
Mean				1.62
C. sonsonatensis	**Locality**	**Length (mm)**	**Width (mm)**	**L / W**
	Río Mar, Panama Bay	8.0 mm	4.4 mm	1.82
	Hicacos Pt., Montijo Bay	8.2	4.5	1.82
	Arenas de Quebro	7.7	4.0	1.92
	Arenas de Quebro	7.2	3.5	2.05
	Arenas de Quebro	7.2	3.7	1.95
	Arenas de Quebro	7.3	3.5	2.09
	Arenas de Quebro	7.2	3.5	2.06
Mean				1.97

Table1. Chart showing length/width ratio of *C. marrae vs. C. sonsonatensis* from Panama.

Fig. 9-14. *Columbella marrae* n. sp. Fig. 9. Ventral view of holotype (Length: 9.6 mm; Width: 5.7 mm). Figs. 10-11. Ventral and dorsal view of holotype. Fig. 12. Protoconch and early teleoconch whorls of holotype (Scale bar 165 µm). Figs. 13-14. Ventral and dorsal view of paratype A (Length: 8.6 mm; Width: 5.2 mm). **Figs. 15-19.** *Columbella sonsonatensis* (Mörch, 1860). Fig. 15. Protoconch of a specimen of *C. sonsonatensis* from Río Mar, Panama (Scale bar 165 µm). Figs. 16-17. Ventral and dorsal views *C. sonsonatensis* from Río Mar, Panama (Length: 8.0 mm; Width: 4.4 mm) . Protoconch shown in Fig. 15. **Figs. 18-19.** Ventral and dorsal views of *C. sonsonatensis* from Hicaco Point, Veraguas Province, southwestern Panama (Length: 8.2 mm; Width: 4.5 mm). **Figs. 20-21.** Ventral and dorsal views of *Columbella fuscata* Sowerby, 1832, Gobernadora Island, Veraguas Province, southwestern Panama (Length: 20.6 mm; Width: 11.4 mm).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Columbella fuscata Sowerby, 1832 (Figs. 20-21), an intertidal species that also prefers a muddy environment (Cantera *et al.*, 1979; Poorman & Poorman, 1988), is closest in general appearance to *C. marrae*. However, it is much larger in size (average length 20 mm); is chestnut-brown, dotted and irregularly spotted with white throughout the last whorl, does not have a thickening of the parietal wall at anal canal; does not have a parietal glaze; and has more numerous (about 12) denticles in the outer lip. The aperture of *C. fuscata* is lavender-colored in fresh specimens, soon fading to white. The aperture of *C. marrae* is yellow.

Superfamily **CONOIDEA**

Family **Terebridae**

Genus Terebra Bruguière, 1789

Terebra mugridgeae, new species
(Figures 5-8)

Description. Shell to 16.1 mm in length (paratype F, Fig. 7), rather thin. Multispiral protoconch, with four whorls rapidly increasing in size; last whorl as wide as first teleoconch whorl. Teleoconch of 11 turreted, slightly convex whorls, each increasing in width more rapidly than most western Atlantic *Terebra* species. First teleoconch whorl with 12 axial ribs; ribs increasing in number to 15 on penultimate whorl of largest specimen. Axial ribs somewhat arcuate, wider than interspaces. Spiral sculpture beginning on second teleoconch whorl, confined to interspaces on first four whorls, crossing axial ribs on later whorls; sculpture of about five to six wide cords on teleoconch whorls, increasing in number on last whorl. Subsutural band inconspicuous, about 8% of last whorl, delimited abapically by a groove; smooth except for elongated nodes formed by axial ribs. Columella recurved, developing two folds in largest specimen. Aperture quadrate. Shell pale tan, with a darker peripheral band and a second, narrower band at base of last whorl. Columella colored purplish in fresh specimens.

Type material. Holotype (ANSP 400857) length 9.7 mm, width 2.7 mm (Figs. 5-6). Paratype A (LACM 2871) length 9.5 mm, width 2.6 mm. Paratype B (BMSM 2240) length 7.8 mm, width 2.2 mm. Paratype C (BMSM 2241) length 7.8 mm, width 2.5 mm. Paratype D (author's collection 16952) length 11.7 mm, width 3.5 mm. Paratype E (ANSP 400858) length 13.6 mm, width 4.2 mm (Fig. 8). Paratype F (UF 268094) length 16.1 mm, width 4.6 mm (Fig. 7). Paratype G (UF 268095) length 8.3 mm, width 2 mm. Paratype H (in author's collection 17918) length 5.9 mm, width 2 mm.

Type locality. Gulf of Mexico, off Mississippi, at 29°53.25'N, 88°40.46'W, in 18 m, dredged in anaerobic sediment (black mud).

Distribution. The species is known from the type locality, where the holotype and paratypes A through F were found. Two specimens, paratypes G and H, were dredged at 29°27.32'N, 88°17.32' W, in 56 m, also in anaerobic sediment.

Etymology. Named for Ms. Edith Mugridge, a well known resident of Sanibel Island, Florida, and the author's shelling mentor over 30 years ago. Ms. Mugridge is one of the great benefactors of the Bailey-Matthews Shell Museum, Sanibel Island.

Discussion. *Terebra mugridgeae* n. sp. is a common species at the type locality. Presumably it has been overlooked because of its small size and inconspicuous coloring. *Terebra mugridgeae* is different from other *Terebra* species in the western Atlantic because of its multispiral protoconch of four whorls. Of the western Atlantic species only *T. petiveriana* Deshayes, 1857, and *T. riosi* Bratcher and Cernohorsky, 1985, have a planktotrophic type protoconch. However, *T. riosi* has 3.5 protoconch whorls, is yellowish cream, almost translucent, has a purplish-brown subsutural line, is much narrower, and reaches 10 mm in length. Currently, it is known only from Brazil. *Terebra petiveriana* has from 3 to 3.5 slender protoconch whorls, has a thick, convex subsutural band, is proportionately narrower, and is a much larger species, reaching 46 mm in length. Currently, this species is known from the northern coast of South America, the West Indies, and the Panamic Province.

The multispiral protoconch of the new species, denoting planktotrophic larval development, may indicate a long veliger stage and, therefore, a wide distribution; however, dredgings done west of the delta of the Mississipi River as far as Galveston, Texas, have failed to produce this species in spite of the fact that the same anaerobic sediment of the type locality exists off the Louisiana coast.

Of the western Atlantic species, *Terebra mugridgeae* is closest in general shape to *Terebra concava* (Say, 1826), which has a quadrate aperture and the general proportions of the new species. However, *T. concava* has two protoconch whorls, concave teleoconch whorls, swollen, nodulated spiral cords above and below the suture, and lacks axial sculpture. *Terebra vinosa* (Dall, 1889) has 1.5 protoconch whorls, is grayish-white, has a swollen subsutural band with 3 to 6 spiral cords, is narrower in shape (the 11th whorl of widest specimen available measures 4.3 mm in width vs. 4.6 for the new species), and has an elongated aperture. *Terebra protexta* (Conrad, 1846) has 1.5 protoconch whorls; is brown or tan (dull white when faded), has narrower and more numerous axial ribs (17-

24 on penultimate whorl), is narrower in shape (the 11th whorl of widest specimen available has a width of 3.9 mm), and has a more elongated aperture.

The new species was collected with *Tellidora cristata* (Récluz, 1844) , *Linga amiantus* (Dall, 1901), *Corbula contracta* Say, 1822, and *Cosmioconcha calliglypta* (Dall and Simpson, 1901). The last two species were common.

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